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THE SPECIES OF THE LEUCANIA UNIPUNCTA GROUP, WITH
A DISCUSSION OF THE GENERIC NAMES FOR THE VARIOUS
SEGREGATES OF LEUCANIA IN NORTH AMERICA

(LEPIDOPTERA, PHALAEINIDAE, HADENINAE)

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The state of the various generic names of the armyworms is at present so unsettled that it has seemed advisable to consider their history and application before discussing the species which have been confused under the name *unipuncta*.

The two most commonly applied names in this complex have been *Heliophila* Hübner, [1806], and *Leucania* Ochsenheimer, 1816; the first has been used by those workers who accept the "Tentamen" and the latter by those who reject it. The common practice has been to group all the species under one or the other of these names. However, in 1902, when Smith (Proc. U. S. Natl. Mus., vol. 25, pp. 159-209) revised the North American forms of this group, he proposed the name *Nelucania* for some slender-bodied species from the western part of the United States, and this has proved to be a sound division. Prior to this a few generic names had been proposed for segregates in the Indo-Australian Region, and an attempt had been made to employ some of the names proposed by Hübner in 1821.

However, the first consideration of the group from a world basis was by Guenée in 1852 (*Histoire Naturelle des Insectes, Species Général des Lépidoptères*, vol. 5), and the second by Walker in 1856 (*List of the Specimens of Lepidopterous Insects in the Collection of the British Museum*, part 9); both workers employed the term *Leucania* for the greater part of the species of this complex. In 1906 Hampson (*Catalogue of the Lepidoptera Phalaenae in the British Museum*, vol. 5) again treated the complex from the world standpoint. He divided the Hadeninae, the subfamily in which the armyworms are placed, on arbitrary characters and the species of this group were dispersed into a number of genera, though most were in the genera *Cirphis* Walker and *Borolia* Moore. Hampson's usage is the one most familiar to modern workers, but it has been considerably modified by recent studies.

In order to discuss satisfactorily the application and synonymy of the generic names the following list is presented; it shows the place of original description, the species originally included and the earliest valid designation of a genotype.

ALETIA Hübner, Verzeichniss bekannter Schmettlinge, p. 239 [1821].

Included species: *vitellina* Hbn.
conigera Schiff.
turca Linn.

TYPE: *Noctua vitellina* Hübner, [1803]. Designated by Moore, Proc. Zool. Soc. London, p. 333, 1881.

BOROLIA Moore, Proc. Zool. Soc. London, p. 334, 1881.

Included Species: *fasciata* Moore
furcifera Moore [*Nomen nudum*]

TYPE: *Borolia fasciata* Moore, 1881. Monobasic.¹

CIRPHIS Walker, List of the Specimens of Lepidopterous Insects in the Collection of the British Museum, part 32, p. 622, 1865.

TYPE: *Cirphis costalis* Walker, 1865. Monobasic with a new species.

DARGIDA Walker, List of the Specimens of Lepidopterous Insects in the Collection of the British Museum, part 9, p. 201, 1856.

TYPE: *Dargida grammivora* (*sic!*) Walker, 1856. Monobasic with a new species.

DASYGASTER Guenée, Histoire Naturelle des Insectes. Species Général des Lépidoptères, vol. 5, p. 201, 1852.

Included species: *hollandiae* Gn.
leucanioides Gn.
epundoides Gn.

TYPE: *Dasygaster hollandiae* Guenée, 1852. Designated by Hampson, Catalogue of the Lepidoptera Phalaenae in the British Museum, vol. 5, p. 473, 1905.

DONACHLORA Sodoffsky, Bulletin de la Société Impériale des Naturalistes de Moscou, p. 87, 1837.

Proposed as a substitute name for *Leucania* Oehsenheimer, 1816.

TYPE: *Phalaena Noctua comma* Linnaeus, 1761. *Ipsa facto*.

EUPSEPHOPAECTES Grote, Bull. Buffalo Soc. Nat. Sci., vol. 1, p. 137, 1873.

TYPE: *Eupsephopaectes procinctus* Grote, 1873. Monobasic with a new species.

EURYPSCHE Butler, Trans. Ent. Soc. London, p. 392, 1886.

TYPE: *Eurypsche similis* Butler, 1886. Monobasic with a new species.

¹The type was designated as *Borolia furcifera*, but this was a *nomen nudum* at the time of publication and was not validated until later in 1881 or early in 1882; see, Moore, Descriptions of New Indian Lepidopterous Insects from the Collection of the late Mr. W. S. Atkinson, part 2, p. 98, 1882.

FARONTA Smith, Ann. New York Acad. Sci., vol. 18, p. 106, 1908.

TYPE: *Faronta alcada* Smith, 1908. Monobasic with a new species.

HELIOPHILA Hübner, Tentamen, p. [1], [1806].

TYPE: *Phalaena Noctua pallens* Linnaeus, 1758. Monobasic.

HYPERIODES Warren, in Seitz, Gross-schmetterlinge der Erde, vol. 3, p. 94, 1910.

Included species: *turca* Linnaeus (*volupia* Rott.), form *limbata* Btlr.,
ab. *turcella* Stgr.

grandis Btlr.

divergens Btlr.

curvata Leech, ab. *obsolescens* Warren.

fuliginosa Hamps.

TYPE: *Phalaena Noctua turca* Linnaeus, 1761. Original designation.

HYPHILARE Hübner, Verzeichniß bekannter Schmettlinge, p. 239, [1821].

Included species: *albipuncta* Schiff.

lithargyrea Esp.

TYPE: *Noctua albipuncta* Schiffermüller, 1775. Designated by Hampson, Catalogue of the Lepidoptera Phalaenae in the British Museum, vol. 5, p. 436, 1905.

HYOPTERIDIA Warren, Novitates Zoologica, vol. 19, p. 11, 1912.

TYPE: *Aletia reversa* Moore, 1884. Original designation and monobasic.

ICHNEUTICA Meyrick, Trans. New Zealand Inst., vol. 19, p. 13, 1887.

TYPE: *Ischnutica ceraunias* Meyrick, 1887. Monobasic with a new species.

LEUCADIA Sodoffsky, Bulletin de la Société Impériale des Naturalistes de Moscou, p. 87, 1837.

Proposed as an emendation for *Leucania* Oechsenheimer, 1816.

TYPE: *Phalaena Noctua comma* Linnaeus, 1761. Ipso facto.

LEUCANIA Oechsenheimer, Die Schmetterlinge von Europa, vol. 4, p. 81, 1816.

Included species: *pallens* Linn.

straminea Ochs. [*nomen nudum*]

impura Hbn.

pudorina Schiff. (*impudens* Hbn.)

obsoleta Hbn.

comma Linn. (*pallens* Esp., *turbida* Hbn., *congrua* Hbn.)

l-album Linn.

TYPE: *Phalaena Noctua comma* Linnaeus, 1761. Designated by Samouelle, Entomologists' Useful Compendium, p. 251, 1819.

PSEUDOTYPE: *Phalaena Noctua pallens* Linnaeus, 1758. Designated by Curtis, British Entomology, vol. 4, p. 157, 1827.

MELIANA Curtis, British Entomology, vol. 16, Alphabetical Index, p. 4 and Systematic Index, p. 13, 1839.

TYPE: *Melia flammea* Curtis, 1828. Monobasic.²

MITHIMNA Sodoffsky, Bulletin de la Société Impériale des Naturalistes de Moscou, p. 87, 1837.

Proposed as an emendation for *Mythimna* Ochsenheimer, 1816.

TYPE: *Phalaena Noctua turca* Linnaeus, 1761. Ipso facto.

MYTHIMNA Ochsenheimer, Die Schmetterlinge von Europa, vol. 4, p. 78, 1816.

Included species: *oxalina* Hbn.

acetosellae Schiff.

turca Linn.

lithargyria Esp. fig. 6 (*ferrago* Fabr.)

albipuncta Schiff. (*lithargyria* Esp., fig. 5)

conigera Schiff. (*floccida* Esp.)

disparilis Ochs. (*imbecilla* Hbn., *aliena* Hbn. Tab. 84, fig. 394)

nexa Hbn.

xanthographa Hbn. (Schiff. ?)

neglecta Hbn.

TYPE: *Phalaena Noctua turca* Linnaeus, 1761. Designated by Samouelle, Entomologists' Useful Compendium, p. 251, 1819.

PSEUDOTYPE: *Noctua albipuncta* Schiffermüller, 1775. Designated by Duponchel, in Godart, Histoire Naturelle des Lépidoptères de France, vol. 7, part 2, p. 71, 1829.

NELEUCANIA Smith, Proc. U. S. Natl. Mus., vol. 25, 203, 1902.

Included species: *niveicosta* Sm.

bicolorata Grt.

citronella Sm.

patricia Grt.

praegracilis Grt.

TYPE: *Neleucania niveicosta* Smith, 1902. Designated by Hampson, Catalogue of the Lepidoptera Phalaenae in the British Museum, vol. 5, 576, 1905.

²The name *Meliana* poses a question. I have been of the opinion that it was an emendation or a *lapsus* for *Melia*. McDunnough also thought so in 1916, Ent. News, vol. 27, p. 396. If either were so, then *Tinea sociella* Fabricius would automatically be the type. This seems the most logical interpretation, since only the species figured on the plates are listed in the index. Lately, the more accepted course has been to regard *Meliana* as a new name with only one included species; I think this is done because Curtis (1829) makes mention of a character to distinguish *flammea*. However, Stephens in 1834, Illustrations of British Entomology, Haustellata, vol. 4, p. 297, citing Curtis' statement, proposed the genus *Senta* for *flammea* Curt. and *sericca* Curt., the two species included in *Melia* which agree in possessing the short palpi mentioned by Curtis, and Westwood designated the type as *flammea* in 1840, Synopsis of the Genera of British Insects, p. 113.

PERSECTANIA Hampson, Catalogue of the Lepidoptera Phalaenae in the British Museum, vol. 5, p. 386, 1905.

Included species: *ewingii* Westw.
aulacias Meyr.
steropastis Meyr.
atristrigata Wlk.

TYPE: *Xylophasia ewingii* Westwood, 1837. Original designation.
PHILOSTOLA Billberg, Enumeratio Insectorum in Museo Gust. Joh. Billberg, p. 87, 1820.

Included species: *turca* Linn.
conica Linn.
ferrago Fabr.

TYPE: *Phalaena Noctua turca* Linnaeus, 1761. Designated by Tams, Entomologist, vol. 72, p. 140, 1939.

PROTOLEUCANIA McDunnough, Can. Ent., vol. 69, p. 141, 1937.

Proposed as a new name for *Pseudoleucania* McD., 1937, *nec Pseudoleucania* Stdgr., 1898.

TYPE: *Leucania rubripennis* Grote and Robinson, 1870. *Ipsa facto*.

PSEUDOLEUCANIA McDunnough, Can. Ent., vol. 69, p. 45, 1937 (*nec Pseudoleucania* Staudinger, 1898).

Included species: species of the *albilinea* group and *quadranulata*.

TYPE: *Leucania rubripennis* Grote and Robinson, 1870. Original designation.

PUDORINA Gistel, Naturgeschichte des Thierreichs, p. xl, 1848.

Proposed as a substitute name for *Leucania* Ochsenheimer, 1816.

TYPE: *Phalaena Noctua comma* Linnaeus, 1761. *Ipsa facto*.

SENTA Stephens, Illustrations of British Entomology, Haustellata, vol. 4, p. 297, 1834.

Included species: *flammea* Curtis
sericea Curtis

TYPE: *Melia sericea* Curtis, 1828. By elimination; see Opinion 6 of the International Commission on Zoological Nomenclature.

PSEUDOTYPE: *Melia flammea* Curtis, 1828. Designated by Westwood, Synopsis of the Genera of British Insects, p. 113, 1840.³

ZOSTEROPODA Grote, Bull. Buffalo Soc. Nat. Sci., vol. 2, pp. 22 and 67, 1874.

TYPE: *Zosteropoda hirtipes* Grote, 1874. Original designation and monobasic.

After exclusion of the species referred to *Neleucania* and *Zosteropoda*, which are closely allied to *Trichorthosia* and the *Orthodes-Hypotrix* complex, the true armyworms divide readily into three groups on the male genitalia. One possesses a

³See the discussion in footnote 2 for the status of this genus and its type.

cucullus of the valve with a diffuse corona of large stout spines, the second has a cucullus of the valve with only a marginal corona of slender spines, and the last lacks a corona. With these obvious differences in the type of corona or its absence are striking differences in the shape of the valves, and the construction and position of the ampulla, digitus and clasper. When the three characters, as outlined above, are applied, three very large groups will result, which I am sure will require further division upon close study. In the United States and Canada the division into subordinate groups is clear cut, but not enough of the tropical New World species have been studied to provide an adequate basis for dividing them. Only the more divergent elements of the Australian and New Zealand faunas have been critically checked.

For the North American fauna the application of the names is not difficult, being complicated only by Opinion 97 of the International Commission on Zoological Nomenclature. For the first group a number of names are available, and in view of the modifications in the group, most of these names will find use for generic concepts. The oldest name is *Heliophila* Hübner, but Opinion 97 rules it out, and its use would depend on an appeal to the Commission. The next oldest names for this immediate concept are *Aletia* Hübner and *Hyphilare* Hübner; I consider the genotypes congeneric, and I am using *Aletia* in preference to *Hyphilare* because it is a familiar name and it occurs first on the same page of the "Verzeichniss." *Eurypsyche* Butler may find use for certain closely related, slender-bodied forms from the Indo-Australian Region. *Mythimna* Oechsenheimer must be restricted to *turca*, the genotype, and its few Asiatic allies; all the species are decidedly modified forms. *Hypopteridia* and *Persectania* are allied genera, and apparently represent a primitive element in the group. However, there still remain a number of closely allied species without an available generic name; they are the species centering around the *unipuncta* group.

For the second group the oldest name is *Faronta* Smith. *Protolencania* McDunnough is considered a synonym, because there are no significant differences in either the male or female genitalia of the two genotypes and the habitus, vestiture and pattern are similar. This is a very homogeneous assemblage of species. *Dargida* is very closely related and the genitalia show no real differences, but it may be maintained as a distinct genus on the basis of other characters, such as the vestiture and tufting.

For the last group *Leucania* Oechsenheimer is the oldest name. *Meliana* seems to represent a distinct entity within this group, but no North American species appear to be

referable to it. *Extincta* Guenée, often referred to this genus, is placed in *Leucania*. There are, however, species in the American and Old World tropics which, with *extincta*, form a group of rather similar appearing species with similar genitalia. For the present I am leaving the species placed in this last group under *Leucania*, but separation of the group is not barred at some future time.

The following is a list of the species in McDunnough's 1938 Check List placed according to the present division of the group.

- | | |
|---------------------------------------|-------------------------------------|
| FARONTA Smith | multilinea Wlk. |
| <i>PROTOLEUCANIA</i> McD. | <i>?solita</i> Wlk. |
| <i>PSEUDOLEUCANIA</i> McD. | <i>lapidaria</i> Grt. |
| aleada Sm. | februalis Hill |
| tetra Sm. | stolata Sm. |
| diffusa Wlk. | imperfecta Sm. |
| <i>?moderata</i> Wlk. | fareta Grt. |
| <i>harveyi</i> Grt. | <i>palliseca</i> Sm. (new synonymy) |
| a. obscurior Sm. | <i>form roseola</i> Sm. |
| b. neptis Sm. | anteoclara Sm. ⁶ |
| c. limitata Sm. | <i>form calgariana</i> Sm. |
| rubripennis G. & R. | oregona Sm. |
| quadrannulata Morr. | scirpicola Gn. |
| | <i>calpota</i> Sm. |
| | <i>pendens</i> Sm. |
| PSEUDALETIA Franc. ⁴ | linita Gn. |
| unipuneta Haw. | <i>amygdalina</i> Harv. (new syno- |
| <i>extranea</i> Gn. | nymy) |
| (HELIOPHILA Hübner) | <i>punctata</i> Strand |
| ALETIA Hübner | juncicola Gn. |
| <i>HYPHILARE</i> Hübner | <i>adjuta</i> Grt. |
| oxygala Grt. | humidicola Gn. |
| <i>minorata</i> Sm. | incognita B. & McD. |
| <i>form rubripallens</i> Sm. | latiusecula H.-S. |
| a. luteopallens Sm. | <i>subpuncta</i> Harv. |
| yukonensis Hamps. | <i>complicata</i> Stkr. |
| | insueta Gn. |
| LEUCANIA Oechsenheimer ⁵ . | <i>adonea</i> Grt. |
| pilipalpis Grt. | <i>mimica</i> Stkr. |
| pseudargyria Gn. | a. heterodoxa Sm. |
| <i>form callida</i> Grt. | b. dia Grt. |
| <i>form derufata</i> Strand | c. megadia Sm. |
| calidior Fbs. | extincta Gn. |
| ursula Fbs. | <i>texana</i> Morr. (new synonymy) |
| inermis Fbs. | <i>ligata</i> Grt. (new synonymy) |
| commoides Gn. | a. flabilis Grt. |
| phragmatidicola Gn. | <i>rimosa</i> Grt. (new synonymy) |

The following species are excluded from the genera above for the reasons stated. *Protoleucania albilinea* (Hbn.) is a distinct species from Argentina. *Protoleucania ferricola* (Sm.) has spines on the mid and hind tibiae and is very close to *Trichorthosia aselenograptia* Dyar from Mexico; both species agree in all essentials with the genotype of *Trichorthosia, parallela* Grt., and are properly placed in that genus. *Leucania dissimilis* B. & McD. is a specimen of *Eriopyga crista* (Wlk.); the species of the *crista* group are superficially close to those of the *punctulum* group, *punctulum* being the genotype of *Eriopyga*. *Leucania suavis* B. & McD. is a species of the genus *Neleucania*. *Leucania pertracta* (Morr.) is *Aletia littoralis* (Curtis); the type specimen is a female of that European species to which has been glued the male abdomen of a species of the *Apamea* complex. I am indebted to the authorities of the Chicago Museum of Natural History, especially Messrs. Gerhard and Wenzel, for the privilege of examining this type.

THE "UNIPUNCTA GROUP"

In 1856, Walker (List of the Specimens of Lepidopterous Insects in the Collection of the British Museum, part 9, p. 93) suggested the possibility that "Perhaps two or three species may be here included under the name *L. extranea*." He distinguished four varieties, which are essentially half the species discussed here. However, he later applied names to two of

⁴*PSEUDALETIA* n. gen. Allied to *Aletia*, but differing from it in the shape of the male genitalia and its component parts. The costa of the valve more or less incurved, not elbowed or outcurved; the sacculus strongly and abruptly produced into a large flap-like process, not evenly rounded or produced from the base; clasper, ampulla and digitus much reduced and modified. Vestiture of the moths smooth, composed mostly of hair and hairlike scales with some normal scales intermixed.

Genotype: *Leucania unipuncta* Haworth, 1809 = *Pseudaletia unipuncta* (Haworth).

This genus includes the species of the *unipuncta* group, discussed herein; the South American species *impuncta* Gn.; the Hawaiian species *dasuta* Hamp., *pyrrhias* Meyr., *macrosaris* Meyr., *typhlodes* Meyr., *amblycasis* Meyr., and an undescribed one; the Galapagos Island species *cooperi* Schaus, and the Indo-Philippine species *albicoستا* Moore.

⁵The name *Cirphis*, which Hampson applied in the main to this group, is untenable because the genotype, a Tasmanian species, is not congeneric with any of the American species, a fact which McDunnough pointed out in 1937, Can. Ent., vol. 69, p. 45. Dr. Elwood Zimmerman kindly furnished me with a photomicrograph of the male genitalia of the genotype, *costalis*, and I can confirm McDunnough's observation.

⁶The male and female genitalia of *anteoclara* and *farcta* show constant differences, and thus I do not agree with McDunnough (Can. Ent., vol. 75, pp. 56-57, 1943) in treating them as races of one species.

these varieties, but on the basis of other specimens, which he did not connect with his previous diagnoses, and which he apparently thought were distinct from anything he had placed under *extranea*. In 1905, Hampson (Catalogue of the Lepidoptera Phalaenae in the British Museum, vol. 5, p. 547-548) treated all the various armyworms resembling *unipuncta* Haworth (*extranea* Guenée) as a single species. This is understandable because the moths are all very similar superficially, but they exhibit rather striking differences in the genitalia of both sexes. Had Hampson known about the genitalic differences, I doubt if it would have altered his treatment because in a later volume, 9, of his Catalogue he treated all the species of the *Amphipoea* (*Apamea*) *oculea* (*nicitans*) group as one species, although he cited the two articles that dealt with the genitalic differences of the species of this group.

I was led to investigate the genitalia of the species of the *unipuncta* group, because I had collected two obviously different species in the mountainous area of north central Luzon in the Philippine Islands. At the time of collecting it was assumed that the common species was *unipuncta* and that the other was one of the species described from the Orient, but then standing in the synonymy. However in 1946, after my return to the United States and to Cornell University, a study was made of all available material at Cornell plus some from the United States National Museum, and it was found that there were not two, but probably eight or nine species.

The task of assigning the available names has been made easy because I have been able to obtain information on all the types of this group in the British Museum (Natural History). Only one name, *consimilis* Moore, has been placed on the basis of the published description and figure; specimens agreeing with this figure and from the type locality have been before me for study, and I do not hesitate to place *consimilis* as a synonym of *separata* Walker.

***Pseudaletia unipuncta* (Haworth), new combination**

Noctua unipuncta Haworth, Lepidoptera Britannica, Pars 2, p. 174, 1809.

Type locality: "Anglia D. Francillon."

Location of type: British Museum (Natural History).

Leucania impuncta Stephens, Illustrations of British Entomology, Haustellata, vol. 3, p. 80, 1829. (*Lapsus calami*)

Leucania extranea Guenée, Histoire Naturelle des Insectes, Species General des Lepidopteres, vol. 5 (Noct. 1), p. 77, 1852.

Type locality: "Amériq. Septentrion., Brésil, Columbie, etc."

Location of type: United States National Museum.⁷

⁷I have selected as the LECTOTYPE the Guenée specimen bearing the large label which carries all the information. It is U.S.N.M. Type No. 60993.

The typical race of this species occurs throughout most of southern Canada and all of the United States; it extends south, on the continent, to at least Mexico City, Mexico. It is also found in Bermuda, the Bahamas, the Azores, the Canaries and Madeira. It occurs in southwestern Europe as far north as the southern British Isles, but only apparently as a stray; all records being from August to October. The longest series of European material I have seen is from the "Pyrenees-Orientales," and the specimens are superficially indistinguishable from specimens from the United States. It is also found in the Hawaiian Islands. The Haworth type of *unipuncta* may have been a specimen collected by Abbot in Georgia and sent to Francillon, Abbot's agent in England. Apparently Francillon was not always too careful in keeping exact data on the source of his material, because both Haworth and Stephens described new species from specimens supposedly originating in England and supplied them by Francillon, but which later have turned out to be American.

Dr. Zimmerman of Hawaii had occasion to examine the type of *unipuncta* and made a slide mount of the genitalia. He was most kind in supplying me with an excellent photomicrograph of the genitalia. The shape of the sacculus of the valve is more like that of most American specimens than the one authentic English male loaned to me by the authorities of the Hope Department at Oxford. However, the differences are a matter of degree, and I have found specimens from the United States that approach very closely the one English specimen in the conformation of the prolongation of the sacculus. There is certainly nothing to indicate two species. The specimens from the Pyrenees show the same variation as specimens from the North American continent. The specimens from the Azores, Canaries and Madeira show a slightly smaller valve with a thicker "neck" to the cucullus; the females show no differences in the genitalia.

The species has been described many times, and there exist many good figures of the moth; the one in Holland's "Moth Book," plate 23, figure 40 is excellent.

Male genitalia as figured: Figures 10, 10a, 11, 11a.

Female genitalia as figured: Figure 33. The bursae of females which have mated show the ridges more rounded and broader, and the angle at which the long arm of the bursa leaves the main part is more rounded.

***Pseudaletia unipuncta antica* Walker, new combination**

Leucania extranea Var. β Walker, List of the Specimens of Lepidopterous Insects in the Collection of the British Museum, part 9, p. 93, 1856.

Locality: "Venezuela and West Coast of America."

Leucania antica Walker, List of the Specimens of Lepidopterous Insects in the Collection of the British Museum, part 9, p. 100, 1856.

Type locality: "West Coast of America" (Hampson says "Venezuela").

Location of type: British Museum (Natural History).

Superficially this race of *unipuncta* is not as stout as the typical subspecies and the wing expanse averages two to five millimeters less. The hind wing is paler, except in the specimens from Jamaica which I associate with this race.

The fore wing tawny, yellowish or reddish, strongly flecked with black in the male, in the female much smoother looking with the flecking less obvious in most specimens; the reniform and orbicular rather obscure, but tinted with orange. The hind wing whitish with strong infuscation near the outer margin, the veins darker, but not markedly contrasting.

This race ranges from Costa Rica and Guatemala to Venezuela. The localities from which I have seen specimens are: Irazu, San Jose and the Candelaria Mts., Costa Rica; Guatemala City and Volcan Sta. Maria, Guatemala; Volcan Chiriqui and Bilbao, Panama; Venezuela, no definite locality. I have associated with this race a series of ten specimens from the island of Jamaica; they are more reddish and with darker hind wings, but agree in size and in the male genitalia with this race.

Male genitalia as figured: Figures 12, 12a.

Female genitalia as figured: Figure 34.

The genitalia of both sexes average smaller than those of the type race, but other than this there are no tangible differences.

Pseudaletia unipuncta quechua, new subspecies

This race is similar to the last, but differs in its much smoother appearance. The male genitalia are smaller and the cucullus is much reduced.

Fore wing smooth tawny, reddish or rarely yellowish, finely peppered with black scales; the reniform and orbicular inconspicuous, faintly tinged with orange; the white spot at the lower end of the discal cell evident and surrounded by a blackish shade as in the other two races. The hind wing whitish, with a slight reddish cast, the margin area strongly infuscate; the veins fuscous.

Male genitalia as figured: Figures 13, 13a.

Female genitalia: The female genitalia show no tangible differences from those of *antica*, being about the same size, and with the same conformation.

Type: ♂, Incachaca, Cochabamba, Bolivia (J. Steinbach).

U.S.N.M. Type No. 60994.

Paratypes: 1 ♂, Napo, Equateur (G. Rivet) in the Museum National d'Histoire Naturelle, Paris; 1 ♂, Env. d'Ambato, Equateur (R. P. Irene Blanc) in the British Museum (Natural History), London; 2 ♂♂ and 4 ♀♀, Aqualani, Carabaya, Peru, 9000 feet, Jube 1905 (Dry Season) (Ockenden) in the British Museum (Natural History), London.

***Pseudaletia cunyada*, new species**

This species is very similar to *sequax*, which is described here, but it is somewhat smaller. The male genitalia are similar to those of *unipuncta*, but differ in the broader juxta and the longer, stouter and more bluntly pointed spines at the apices of the cuculli of the valves. The female genitalia are also similar to *unipuncta*, but are larger than those of the two South American races, and the long arm of bursa is somewhat stouter.

Fore wing pale yellowish gray, heavily flecked with black, a dark streak along the lower edge of discal cell, a dark oblique streak from the apex to vein 5 or a little beyond; postmedial line represented by a vague series of double dark dots; reniform and orbicular evident, pale, shaded with orange, the white spot at lower end of discal cell vague. Hind wing white with a slight fuscous cast, more pronounced toward the outer margin; veins dark and contrasting sharply; fringe pale.

Male genitalia as figured: Figures 14, 14a.

Female genitalia as figured: Figure 35.

Type: ♂, Bogota Columbia (Apollinaire). U.S.N.M. Type No. 60995.

Paratypes: 1 ♂, same data as type, 1 ♂, Columbia, S. America, both in the Collection of the United States National Museum, 2 ♂♂ and 1 ♀, Bogota, Columbia, 1 ♂, U. S. Columbia, in the collection of the American Museum of Natural History, New York.

It is possible that this series represents nothing more than another race of *unipuncta*, but I regard it for the time being as a distinct species. Perhaps when we know more about the South American fauna and when we have considerably more material, we will be able to determine correctly the relationships of this form.

***Pseudaletia roraimae*, new species**

A rather distinctive looking moth, but obviously related to *unipuncta*, the male genitalia being superficially like that species, but more massive.

Fore wing tawny with a brown cast, with a dark gray, though not too evident, line along lower edge of discal cell; a faint shade running obliquely from the apex to vein 5; postmedial line complete and traceable, consisting of a double series of fine black points, the outermost on the veins, the innermost in the interspaces, and connected by a very fine dark line; antemedial line represented by an irregular series of dots; orbicular and reniform hardly noticeable, but represented by orange scaling. Hind wing dirty white with the marginal area fuscous, the veins dark and conspicuous. Expanse: 42 mm.

Male genitalia as figured: Figures 15, 15a.

Type: ♂, Mt. Roraima, Brazil (Summit), 1927, in the collection of the American Museum of Natural History, New York.

Pseudaletia adultera (Schaus), new combination

Leucania adultera Schaus, Trans. Amer. Ent. Soc., vol. 21, p. 232, 1894.

Type locality: "Castro, Parana," Brasil.

Location of type: United States National Museum.

This species averages smaller than any of the others, and has a more striated appearance, caused by the more prominent white scales on the veins and the tendency to develop dark streaks in the interspaces; however some females are quite plain and smooth looking. There is a tendency for the occurrence of a rather prominent dark line along the bottom of the discal cell; the reniform and orbicular are quite inconspicuous. This species ranges from southern Brasil, throughout Uruguay and Paraguay, and the northern part of Argentina.

Male genitalia as figured: Figures 16, 16a.

Female genitalia as figured: Figure 36.

The genitalia of both sexes show a similarity to *unipuncta*, but differences are at once obvious, the juxta in the male is almost twice as wide as that in *unipuncta*, the cucullus is smaller and more linear and the corona is more limited; in the female the genitalia are smaller than *unipuncta*, with the long arm of the bursa less massive and more broadly attached to the bursa proper.

Pseudaletia punctulata (Blanchard), new combination

Spaetotis punctulata Blanchard, in Gay, Historia Fisica y Politica de Chile, Fauna Chilena, Zoologia, vol. 7, p. 74, 1852.

Type locality: "Santa Rosa, etc. Chile."

Location of type: Museum National d'Histoire Naturelle de Paris.

Leucania trifolii Butler, Trans. Ent. Soc. London, p. 114, 1882.

Type locality: "Valparaiso."

Location of type: British Museum (Natural History).

Leucania saccharivora Butler, Trans. Ent. Soc. London, p. 115, 1882.

Type locality: "Valparaiso."

Location of type: British Museum (Natural History).

This species appears to be confined to central Chile, all the material before me coming from that particular area. The male genitalia are very distinctive, though the female genitalia are in some respects quite similar to those of *sequax*, but nevertheless abundantly distinct. The moth is generally quite reddish tawny in color, but occasional specimens are almost devoid of these reddish tints. Blanchard's type is such a specimen, as is *trifolia* Butler; however, *saccharivora* Butler applies to the reddish form.

Male genitalia as figured: Figures 17, 17a.

Female genitalia as figured: Figure 37.

***Pseudaletia sequax*, new species**

‡*Cirphis punctulata* Draudt, in Seitz, Gross-schmetterlinge der Erde, vol. 7, pl. 24, fig. h5, 1924.

This is apparently the common species in the tropics of both Americas; it ranges from Cuba and Mexico City, Mexico south to the southern part of Uruguay and northern Argentina. In size it is equal to or larger than the average *unipuncta*. The genitalia of both sexes resemble those of *punctulata*, and with that species it forms a subgroup distinct from *unipuncta*.

Fore wing pale tawny, very heavily flecked with blackish; the post-medial line indicated by a double series of dots; a dark oblique shade from the apex to vein 5, not always conspicuous; reniform and orbicular pale, but inconspicuous, often with a yellowish orange cast; the white spot at end of discal cell usually with a black spot on either side of it, but not always so. Hind wing white with slight infuscation, most pronounced near the outer margin; the veins very dark and contrasting.

Male genitalia as figured: Figures 18, 18a.

Female genitalia as figured: Figure 38.

While the genitalia of both sexes resemble those of *punctulata*, the differences are striking; in the male the cucullus is massive when compared to that of *punctulata*, the clasper is larger and of a different shape, the uncus longer and the juxta narrower; in the female the differences are not quite so marked, but the long arm of the bursa is longer and heavily chitinized for more of its length.

Type: ♂, Jalapa, Mexico (Schaus), U.S.N.M. Type No. 60996.

Paratypes: 10 ♂♂ and 18 ♀♀ in the collection of the American Museum of Natural History, New York; 14 ♂♂ and 19 ♀♀ in the collection of the British Museum (Natural

History), London; 1 ♂ in the Collection of the Museum National d'Historie Naturelle, Paris; 9 ♂♂ and 8 ♀♀ in the collection of the United States National Museum. These are from the following localities: Mexico, Costa Rica, Guatemala, Columbia, Venezuela, Ecuador, Peru, Brasil, Paraguay, Uruguay and Argentina, also from the islands of Cuba and Jamaica. These last are darker and redder than the ones from the mainland.

***Pseudaletia separata* (Walker), new combination**

Leucania separata Walker, List of the Specimens of Lepidopterous Insects in the Collection of the British Museum, part 32, p. 626, 1865.

Type locality: "Shanghai, China."

Location of type: British Museum (Natural History).

Leucania consimilis Moore, Proc. Zool. Soc. London, p. 336, pl. 37, fig. 19, 1881.

Type locality: "Darjiling," India.

Location of type: "Staudinger Collection." Its exact whereabouts at the present time is unknown, probably in the Berlin Museum.

This species is widespread in the eastern part of the Palaearctic and the Indo-Australian Regions; it ranges from the Amurland through China and Japan to the Philippines, through eastern India to the Dutch Indies and thence to Australia and New Zealand and to Fiji. Superficially the moth is close to *unipuncta*, but differs in the somewhat paler hind wing and the generally more flecked appearance in both sexes. This species, like most of the group, varies somewhat in the general tone of the fore wings, some specimens being quite devoid of any rusty red tints and others showing this color quite conspicuously. The genitalia of the male are striking in the possession of a very long spur from the apex of the cucullus of each valve.

Male genitalia as figured: Figures 19, 19a.

Female genitalia as figured: Figure 39.

***Pseudaletia australis*, new species⁸**

The most distinctive feature of this species is to be found on the underside of the hind wing where there is a wide black band occupying the outer third of the wing.

⁸*Leucania? convecta* Walker (List of the Specimens of Lepidopterous Insects in the Collection of the British Museum, part 11, p. 711, 1857) described from Moreton Bay, Australia, does not belong to this group. The male genitalia look like those of *Cirphis*, but I would hesitate to refer the species to that genus until I could study it at first hand.

Fore wing yellow tawny, paler or darker, rarely reddish; the markings much as in *separata*; the postmedial line vague, often barely traceable, the dots small and not contrasting; the reniform and orbicular very vague, indicated in some specimens by an orange flush on the ground, in others not evident, no evident dark streak along the bottom of the discal cell; the white spot at end of discal cell with a dark brownish or blackish beyond it. Hind wing with the basal two thirds whitish, the outer third fuscous; the veins not particularly contrasting on the basal area. The species is known only from South Australia and Tasmania.

Male genitalia as figured: Figures 20, 20a.

Female genitalia as figured: Figure 40.

The genitalia of the male are essentially like those of *separata*, but they differ by the absence of the long spurs from the apices of the cuculli of the valves, by the more massive cuculli and the longer narrower juxta; the sacculus lobe is narrower than that of *idisana*; the female genitalia are quite similar to those of *separata* and differ like that species in being smaller than *idisana* and with the free arm of the bursa less robust and with the chitinous ridging less extensive.

Type: ♂, S. Australia, Port. Victor, II, 1897 (P. de la Garde) in the collection of the British Museum (Natural History), London.

Paratypes: 18 ♂♂ and 10 ♀♀ in the collections of the American Museum of Natural History, New York, the British Museum (Natural History), London and the United States National Museum, from Sidney, Melbourne, Victoria, New South Wales and Tasmania.

Pseudaletia idisana, new species

This is a rather distinctive species superficially; it is very contrastingly marked, and the dorsum of the abdomen is clothed with rather long, fine black hair.

The general color a very dusky tawny. The head and thorax darker than the wings; fore wings tawny with a general, fine peppering of black flecks; the orbicular oval, the reniform sub-circular, both spots bright orange tawny and very conspicuous; the ground of the discal cell, on which they lie, very dark fuscous; the claviform vague, but indicated by a rather long, narrow, ill-defined, light orange tawny mark, rounded at its outer end; a very evident, black, diagonal streak from just below apex to vein 4 (M3), the area on the outer side of the streak heavily infuscate; none of the cross lines discernible; fringe concolorous. Hind wing black with a brownish sheen in some lights, fringe pale and contrasting with the ground color. Lower surfaces of both wings heavily infuscate with black, the veins darker and contrasting; an indication of a small, pale discal mark on the fore wings. Pectus dark brownish gray.

Male genitalia somewhat larger than *separata*, and differing at once by the absence of the long spurs from the apices of the cuculli of the valves; the corona somewhat more extensive than in *separata*; the clasper with the two lobes bluntly pointed and about equal in size, not rounded and with the lower longer as in *separata*. The female genitalia more robust than *separata*, and with the chitinous ridging of the free arm of the bursa more extensive.

Male genitalia as figured: Figures 21, 21a.

Female genitalia as figured: Figure 41.

Type: ♂, Bagnio, Mountain Province, Luzon, Philippine Islands, 19 May 1945 (J. G. Franclemont), in Franclemont Collection. This specimen was taken at bait on the grounds of the Brent School in the City of Baguio.

Paratypes: 3 ♀♀, Haight's Place, Pauai, subprov. Benguet, Luzon, 7000 ft. (!), (A. E. Wileman), 2 in the collection of the British Museum (Natural History), London, and 1 in the collection of the United States National Museum from the collection of the British Museum (Natural History).

ACKNOWLEDGMENTS

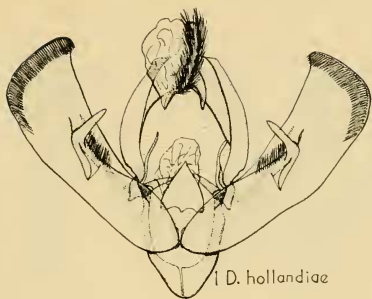
I wish to express my thanks to Mr. Carl Heinrich for the loan of material from the collection of the United States National Museum while I was at Cornell University, to Dr. Frederick H. Rindge, of the American Museum of Natural History, for the loan of material from that institution, to Mr. Ernest Taylor, of the Hope Department at Oxford for the loan of authentic English and Irish specimens of *unipuncta*, to Mr. D. S. Fletcher, of the British Museum (Natural History), who in conjunction with Mr. W. H. T. Tams sent me all the material of the *unipuncta* group in their collections, to Mr. Elwood C. Zimmerman of Hawaii, now working at the British Museum (Natural History), for his many kindnesses in answering questions and furnishing photomicrographs of the genitalia of the types of this group in the collections in London, and to Monsieur Pierre E. Viette, of the Museum National d'Histoire Naturelle in Paris, for his graciousness in sending me Blanchard's type of *punctulata* for examination and study.

EXPLANATION OF FIGURES⁹

Figures 1 to 22 are of the male genitalia with the aedoeagi removed, figures 1a to 22a are of the corresponding aedoeagi, and figures 23 to 41 are of the female genitalia. All figures of each sex are drawn to the same scale.

⁹All drawings are by Miss Addie Egbert, of the Bureau of Entomology and Plant Quarantine, United States Department of Agriculture, and were made under the supervision of the author.

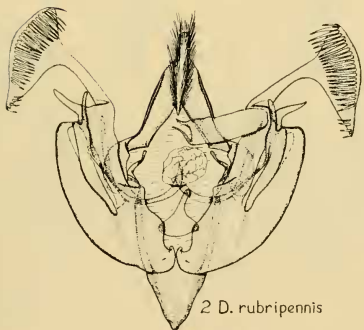
- 1 & 1a. *Dasygaster hollandiae* Guenée. Victoria, Australia.
- 2 & 2a. *Faronta rubripennis* (Grote and Robinson). Riley Collection.
- 3 & 3a. *Dargida procincta* (Grote). Riverside Co., California.
- 4 & 4a. *Leucania comma* (Linnaeus). Europe.
- 5 & 5a. *Persectania ewingii* (Westwood). Australia.
- 6 & 6a. *Mythimna turca* (Linnaeus). Europe.
- 7 & 7a. *Aletia albipuncta* (Schiffermüller). Europe.
- 8 & 8a. *Aletia vitellina* (Hübner). Europe.
- 9 & 9a. *Aletia oxygala* (Grote). Middle California.
- 10 & 10a. *Pseudaletia unipuncta* (Haworth). England.
- 11 & 11a. *Pseudaletia unipuncta* (Haworth). Arkansas
- 12 & 12a. *Pseudaletia unipuncta antica* (Walker). Guatemala, Volcan St. Maria.
- 13 & 13a. *Pseudaletia unipuncta quechua* Franclemont. TYPE.
- 14 & 14a. *Pseudaletia cunyada* Franclemont. TYPE.
- 15 & 15a. *Pseudaletia roraimae* Franclemont. TYPE.
- 16 & 16a. *Pseudaletia adultera* (Schaus). Tucuman, Argentina.
- 17 & 17a. *Pseudaletia punctulata* (Blanchard). Concepcion, Chile.
- 18 & 18a. *Pseudaletia sequax* Franclemont. Tucuman, Argentina.
- 19 & 19a. *Pseudaletia separata* (Walker). Baguio, Luzon, Philippine Islands.
- 20 & 21a. *Pseudaletia australis* Franclemont. N. E. Tasmania.
- 21 & 22a. *Pseudaletia idisana* Franclemont. TYPE.
- 22 & 22a. *Hypopteridia reversa* (Moore). Mt. Makling, Luzon, Philippine Islands.
23. *Dasygaster hollandiae* (Guenée). Victoria Australia.
24. *Persectania ewingii* (Westwood). New Zealand.
25. *Hypopteridia reversa* (Moore). Mt. Makiling, Luzon, Philippine Islands.
26. *Dargida procincta* (Grote). California.
27. *Faronta rubripennis* (Grote and Robinson). Riley Collection.
28. *Mythimna turca* (Linnaeus). Europe.
29. *Leucania comma* (Linnaeus). England.
30. *Aletia vitellina* (Hübner). Europe.
31. *Aletia albipuncta* (Schiffermüller). Europe.
32. *Aletia oxygala* (Grote). Palo Alto, California.
33. *Pseudaletia unipuncta* (Haworth). Ithaca, New York.
34. *Pseudaletia unipuncta antica* (Walker). Volcan Chiriqui, Panama.
35. *Pseudaletia cunyada* Franclemont. Bogota, Columbia.
36. *Pseudaletia adultera* (Schaus). Castro, Parana, Brasil.
37. *Pseudaletia punctulata* (Blanchard). Est. Araucana, Chile.
38. *Pseudaletia sequax* Franclemont. Merida, Venezuela.
39. *Pseudaletia separata* (Walker). Tsinana, China.
40. *Pseudaletia australis* Franclemont, New South Wales, Australia.
41. *Pseudaletia idisana* Franclemont, Benguet Subprovince, Luzon, Philippine Islands.



1 *D. hollandiae*



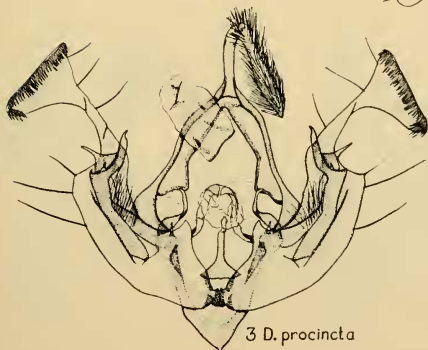
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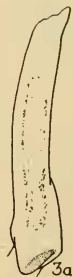
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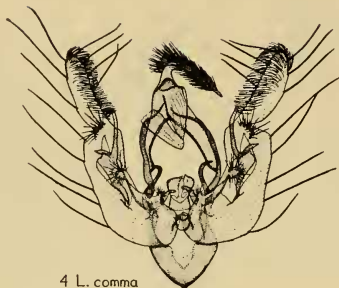
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3 *D. procincta*



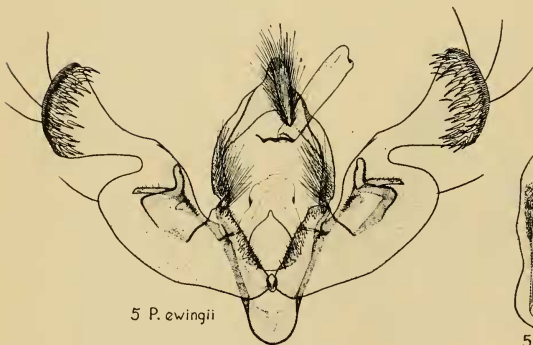
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4 *L. comma*



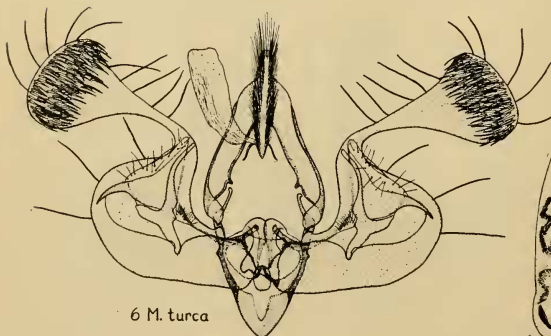
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5 *P. ewingii*



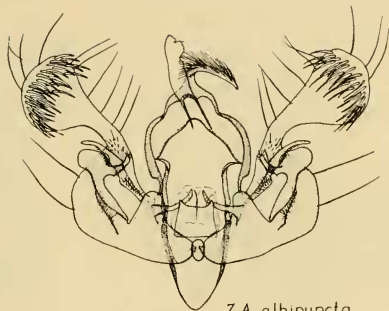
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6 *M. turca*



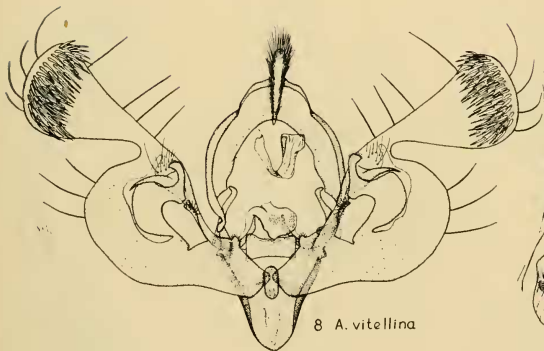
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7 *A. albipuncta*



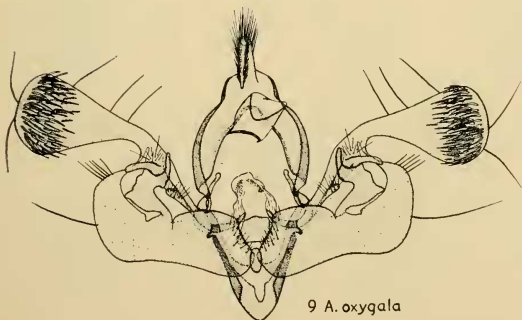
7a



8 *A. vitellina*



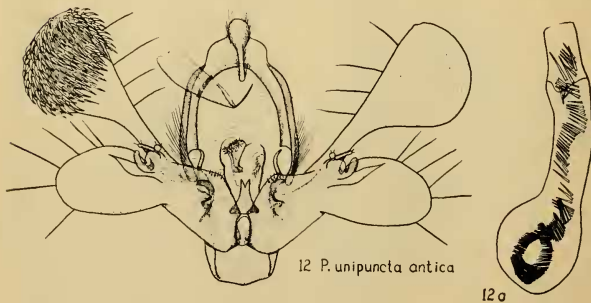
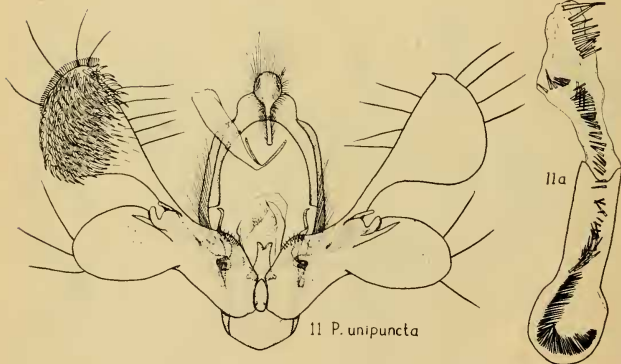
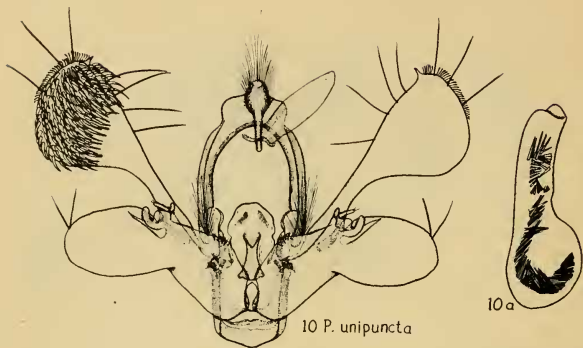
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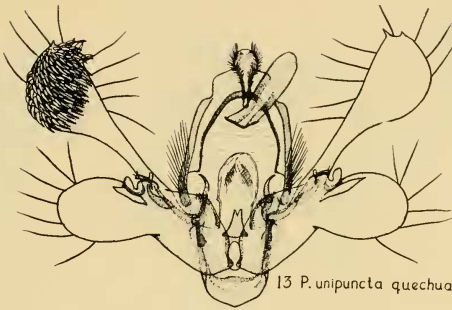


9 *A. oxygala*

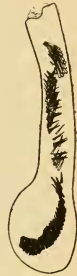


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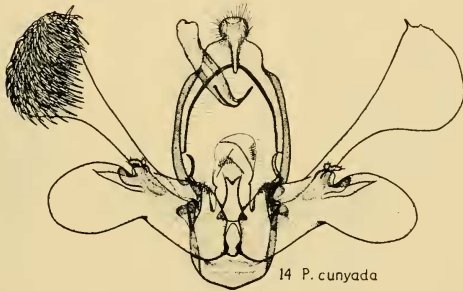




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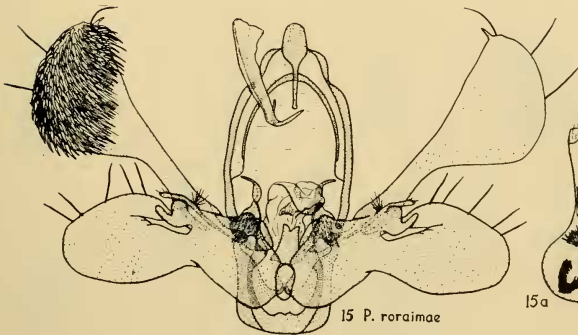
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14 *P. cunyada*



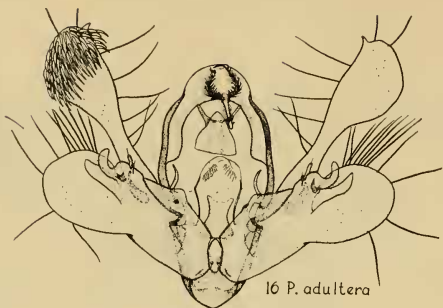
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15 *P. roraimae*



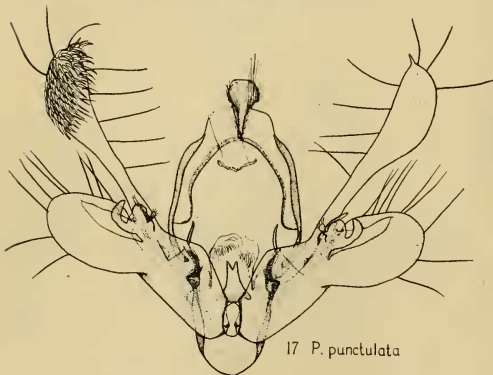
15a



16 *P. adultera*



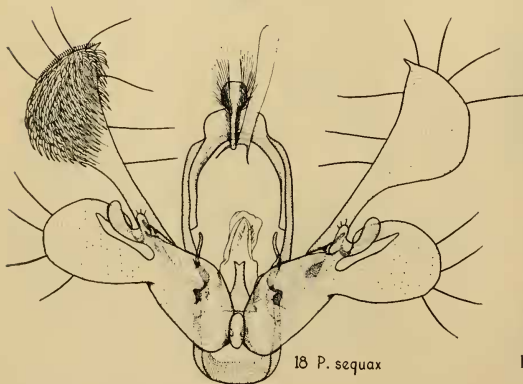
16a



17 *P. punctulata*



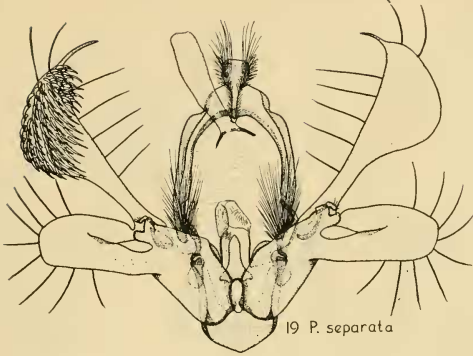
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18 *P. sequax*



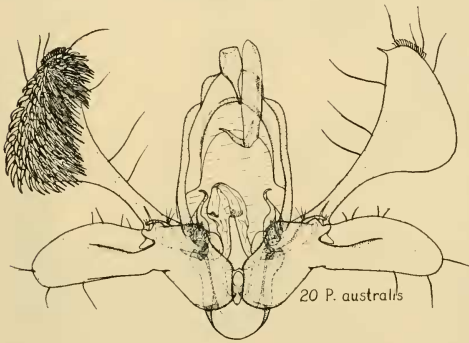
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19 *P. separata*



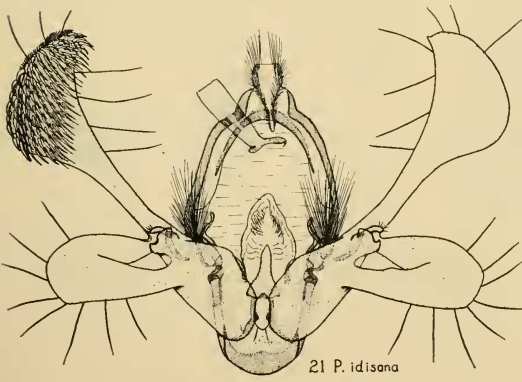
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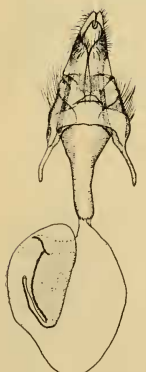
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21 *P. idisana*



21a



23 *D. hollandiae*



24 *P. ewingii*



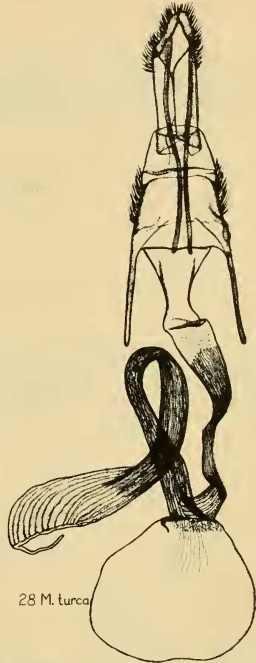
25 *H. reversa*



26 *D. procincta*



27
F. rubripennis



28 *M. turca*



29 *L. comma*



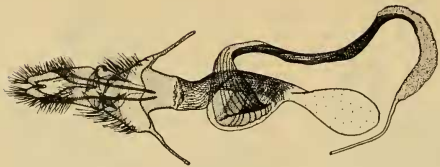
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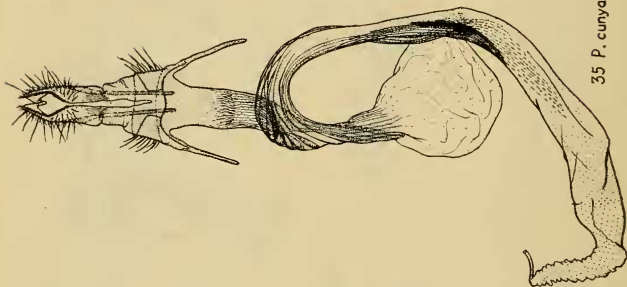
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A. albipuncta



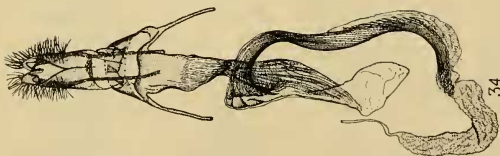
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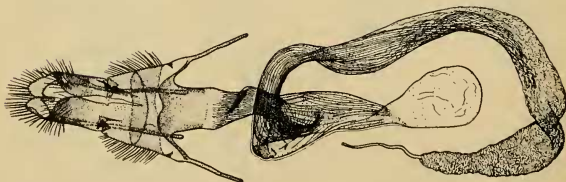
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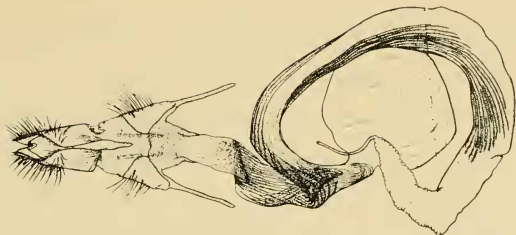
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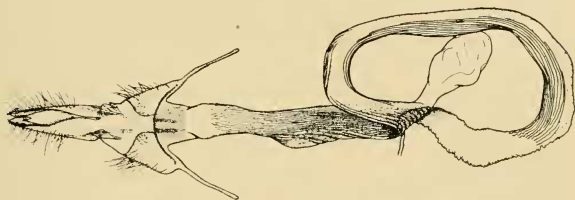
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P. unipuncta antica



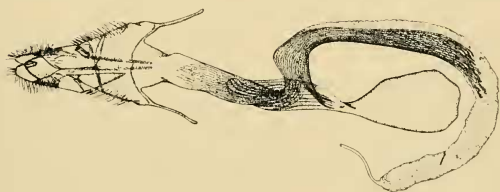
33 *P. unipuncta*



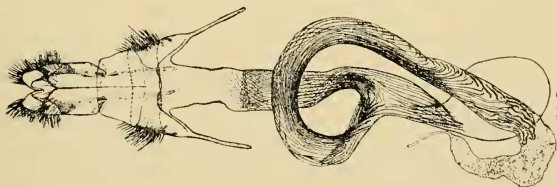
41 *P. idisana*



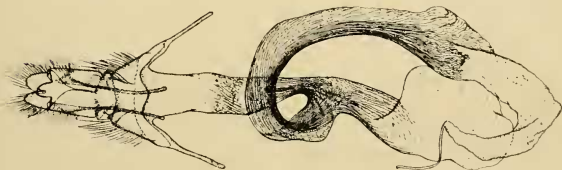
40 *P. australis*



39 *P. separata*



38 *P. sequax*



37 *P. punctulata*